

## **CLAIMS**

I claim:

1. A sail system comprising a sailing vessel having one or a plurality of masts, one or a plurality of forestays, one or a plurality of main or mizzen sails attached to such masts, and one or a plurality of semi-elliptical sails defined by a luff, a foot, and a leech, including means for attaching each headsail to each forestay, means for attaching each main or mizzen sail to each of the said masts, and means for attaching the clew of each such sail to the vessel, wherein at least one of the said sails is horizontally deployed, is attached to roller furling means, and each such horizontally deployed sail comprises.
  - a. a semi-elliptical body, and
  - b. means for supporting the positive roach of the said sail and optimizing reefing and furling of the said sail;
  
2. A sail system comprising a sailing vessel having one or a plurality of masts, one or a plurality of main or mizzen sails attached to such masts, one or a plurality of forestays, and one or a plurality of semi-elliptical sails defined by a luff, a foot, and a leech, including means for attaching each such main or mizzen sail to each such mast, means for attaching each such headsail to each such forestay, and means for attaching the clew of each such sail to the vessel, wherein at least one of the said sails is vertically deployed, such vertically deployed sail comprising:
  - a, Integral means for booming the said sail and for maintaining leech and vang tension, and
  - b. integral means for reefing and controlling the said sail during deployment, reefing and recovery maneuvers.

c. means for supporting the positive roach of the said sail.

3. A sail system comprising a sailing vessel having one or a plurality of masts, one or a plurality of main or mizzen sails attached to such masts, one or a plurality of forestays, and one or a plurality of semi-elliptical or triangular sails defined by a luff, a foot, and a leech, including means for attaching each such main or mizzen sail to such masts, means for attaching each such headsail to each such forestay, and means for attaching the clew of each of the said sails to the vessel, wherein at least one in-place, automatic closed-end, low-profile sail stowage bag having support means independent of its companion sail stows the said sail and can remain in place during navigation or be removed, as required.

4. The sailing system of claim "1", wherein the said horizontally deployed semi-elliptical headsail is non-overlapping and comprises

a. A flexible, semi-elliptical body comprising a head, a foot, and a clew;

b. one or a plurality of roach support means comprising semi-rigid battens or batten-substitute means;

c. means for attaching the said battens or batten substitute means to the said sail or for incorporating the said batten substitute means onto or into the said sail, such means likewise being situated parallel to the luff of the said headsail;

5. The sailing system of claim "1", wherein the said horizontally deployed semi-positive roach and positive foot dimensions enabling the said sail to be reduced to a non-overlapping working jib having consistently valid sheeting angles throughout the furling range;

a. one or a plurality of roach support means comprising semi-rigid battens or batten-substitute means;

b. means for attaching the said battens or batten substitute means to the said sail, such means likewise being situated parallel to the luff of the said headsail;

6. The sailing system of claim "1" wherein the said horizontally deployed, semi-elliptical headsail comprises one or a plurality of means

for supporting the said positive roach throughout the deployment range of the said headsail, such means being incorporated into the material of the said sail during fabrication of the said sail;

7. The sailing system of claim "2.", wherein the said vertically deployed headsail is non-overlapping, and the means for booming the said headsail, whether fully deployed or reefed, comprises one or a plurality of semi-rigid battens or batten substitute means connected at one end, at a right angle to the said headstay, and at the other end, to the clew of the said non-overlapping headsail and contained in batten pockets attached to the body of the said sail;

8. The sailing system of claim "2.", wherein the said vertically deployed headsail is non-overlapping, and comprises one or a plurality of means for supporting the said positive roach throughout the deployment range of the said vertically deployed headsail, such means either attached to the sail material or applied directly into or onto the said sail material during fabrication.

9. The sailing system of claim "2.", wherein the said vertically deployed headsail is overlapping, and comprises semi-rigid means for supporting the positive roach of the said headsail, such means either attached to the sail material or applied directly into or onto the said sail material during fabrication.

10. The sailing system of claim "2", wherein the said vertically deployed sail comprises end-plate means, such means being constructed of light reflective or luminescent material.

11. The sailing system of claim "2", wherein the said vertically deployed sail comprises end-plate means, such means being constructed of material capable of reflecting radar waves.

12. The sailing system of claim "2.", wherein the said vertically deployed headsail is non-overlapping, and comprises integral means for booming and vang-ing the said headsail, whether fully deployed or reefed;
13. The sailing system of claim "3.", wherein one or a plurality of the said automatic sail stowage bags comprise a rigid or semi-rigid lower section serving as a boom, and an upper section constructed of flexible material such as cloth, or of semi-rigid material such as plastic;
14. The sailing system of claim "3.", wherein one or a plurality of the said automatic sail stowage bags comprise construction entirely in a flexible material such as cloth;
15. The sailing system of claim "3.", wherein one or a plurality of the said automatic sail stowage bags comprise construction entirely in a semi-rigid material such as plastic;
16. The sailing system of claim "3.", wherein one or a plurality of the said automatic sail stowage bags comprise construction of flexible material in part and of semi-rigid material in part;
17. The sailing system of claim "3.", wherein one or a plurality of the said automatic sail stowage bags comprise means for collecting rainwater;
18. The sailing system of claim "3.", wherein one or a plurality of the said automatic sail stowage bags comprise means for attaching or otherwise incorporating solar energy cells or panels;
19. The sailing system of Claim "1", wherein one or a plurality of the mast is attached to a boom comprising structural integrity appropriate to the on and off-loading of cargo;
20. the sailing system of claim "1" wherein one or a plurality of the said booms comprise means for collecting rainwater;